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Volker Kronseder

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EXAMINER

HORNING, JOEL G

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/517,556	<b>Applicant(s)</b> KRONSEDER ET AL.	
	<b>Examiner</b> JOEL G. HORNING	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 7-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12-08-2004</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-6 and 13-15, drawn to a method for manufacturing hollow bodies.

Group II, claim(s) 7-12, drawn to a device for the manufacture of hollow bodies.

The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the technical feature they share in common is hollow bodies with a gas barrier coating wherein the surface energy of the body was increased before it was coated, dried, and subject to an electrostatic discharge. Maruhashi et al (US 4393106) teach the processing of hollow bodies with gas barrier coatings wherein: a preliminary wetting property improving treatment (increasing the surface energy) process is performed, a coating is applied, dried and the bottle substrate can be subjected to a "conducting treatment" (col 10, line 61- col 11, line 24).

During a telephone conversation with Richard Hoffman on 3 September 2008 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-6 and 13-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 7-12 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

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remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 13 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New claim 13 further requires that the surface energy be increased to  $>760\text{mN/m}$ , while the original disclosure only teaches increasing the surface energy  $>70\text{mN/m}$ . Likewise new claim 15 requires that drying occur below  $\sim 45^{\circ}\text{C}$ , though the original disclosure only teaches performing the drying process below  $\sim 60^{\circ}\text{C}$  or at approximately  $45^{\circ}\text{C}$ . In both cases while the ranges are part of the genus range, nothing in the original disclosure mentions the subgenus range or provides a single example of either of the newly claimed subgenus ranges. See, e.g., *In re Lukach*, 442 F.2d 967, 169 USPQ 795 (CCPA 1971) and *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972).

### ***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1,5,6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruhashi et al (US 4393106) in view of Heiremans et al (US 4181239) in view of Pocock et al (US 4534995).

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**Claim 1** is directed towards a method for manufacturing hollow bodies with gas barrier coating agent based upon polyvinyl alcohol wherein said hollow bodies are:

- a. pretreated to increase surface energy
- b. as a second step, electrostatically discharging the surface
- c. coating the surface
- d. drying the surface

Maruhashi et al teach a process for manufacturing hollow bodies with gas barrier coatings (abstract and col 1, lines 6-18) wherein the hollow body is given a preliminary treatment to increase the substrate surface energy (increase wetting), such as a corona discharge treatment (col 10, lines 33-38). After the pretreatment, the hollow body is coated with a barrier layer material (col 10, lines 26-33). The coated material is then dried (col 11, lines 19-24). Maruhashi et al's goal is to produce a body with excellent gas barrier layer properties (col 1, lines 6-18) and teach the use of and effectiveness of many different materials (table 1), but they do not specifically teach using polyvinyl alcohol as the barrier coating material.

However, Heiremans et al teach the use of polyvinyl alcohol as a gas barrier layer coating for hollow bodies. They teach that polyvinyl alcohol has an oxygen permeability of  $6.24 \times 10^{-17}$  ml.cm/cm<sup>2</sup> sec.cmHg (col 4, line 47), which is more than two orders of magnitude better oxygen resistance than any barrier material listed in Table 1 of Maruhashi et al.

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to use a polyvinyl alcohol based coating as the barrier coating on the hollow

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bodies in order to improve the hollow bodies barrier property or in order to use thinner barrier films.

Maruhashi et al teach subjecting the bottle to a conducting treatment, which (because it is conductive) would be expected to electrostatically discharge the surface (col 10, lines 38-41).

Furthermore, Pocock et al teach a method for treating hollow bodies to improve their barrier properties. In that method they teach that positively charged containers will collect dust from the air, which results in imperfections in the coating. They teach that conditioning the container with ionized air (electrostatically discharging it) before depositing the barrier coating will give the container a slightly negative charge and avoid this problem. (col 2, lines 45-56).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to electrostatically discharge the container before applying the barrier coating in order to reduce imperfections in the coating.

Regarding **claim 5**, Maruhashi et al teach that coating can be performed by spraying (blowing) the coating agent against the hollow body (col 10, lines 26-29).

Regarding **claims 6 and 15**, Maruhashi et al teach that the appropriate drying process conditions are changed depending upon the thickness of the coating layer, and that drying at a temperature range between 40°C and 160°C is usually sufficient. This overlaps with applicants claimed temperature ranges. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

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Heiremans et al teach that polyvinyl alcohol is sensitive to humidity with a decrease in its barrier properties towards oxygen with increasing absorption of humidity (col 5, lines 9-15).

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to dry the polyvinyl alcohol coating using an environment with no moisture present in order to avoid degrading the barrier layer properties of the coating. This of course falls within the claimed range of less than 3 g/m<sup>3</sup> of water.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruhashi et al in view of Heiremans et al in view of Pocock et al as applied to claim 1 above, and further in view of Kuckertz et al (US 6613394).

**Claim 3** requires that the method of increasing the surface energy is by flaming.

As stated above, Maruhashi teaches the use of different methods including a corona discharge treatment to increase the surface energy of the hollow body, but Maruhashi et al in view of Heiremans et al in view of Pocock et al does not specifically teach flaming.

However, Kuckertz et al teach that corona discharge methods have disadvantages, like the production of pin holes in the coatings (col 3, lines 19-21) and electrostatic charging. They teach that their method of exposing the surface to “an atmospheric plasma generated by an indirect plasmatron” avoids this disadvantage while still increasing surface energy (improving wettability) and increasing adhesion (col 4, lines 6-24). The surface to be treated is exposed to hot plasma with process gas/aerosol, which is a flaming process (col 7, lines 15-26).



Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to use a flaming process instead of a corona discharge method in order to avoid electrostatic charging and pin holes in the coatings while still increasing the surface energy and improving adhesion of the coating deposited afterwards.

Regarding **claim 2**, when the treated surface is polyethylene terephthalate (PET), the flaming process will increase the surface energy to 62-64mN/m (table 2).

5. Claims 4 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruhashi et al in view of Heiremans et al in view of Pocock et al as applied to claim 1 above, and further in view of Hostettler et al (US 6017577).

**Claim 4** further requires an additional preliminary treatment of the surface with a fat dissolving agent before the surface energy increasing treatment. Maruhashi et al in view of Heiremans et al in view of Pocock et al teach the production of polymeric hollow bodies (for examples, the abstract of Maruhashi). As stated above, they teach plasma treatments on those substrates, like corona discharge to increase their surface energy, but they do not teach a treatment before the plasma treatment.

However, Hostettler et al teach that "it is often advantageous to pretreat the polymeric substrate surface before plasma treatments with polar or nonpolar organic solvents... in order to remove any surface impurities..."(col 9, lines 62-66). These surface impurities can interfere with the plasma treatment (col 10, lines 18-19). Hostettler et al teach using ethyl alcohol (ethanol) as a suitable solvent (**claim 14**), Which, since claim 14 depends upon claim 4, must be a "fat dissolving agent."

Thus it would have been obvious to a person of ordinary skill in the art at the time of invention to treat the surface of the hollow body with ethyl alcohol before the plasma treatment in order to remove impurities that could interfere with the efficacy of the plasma treatment.

Claim 2 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruhashi et al in view of Heiremans et al in view of Pocock et al as applied to claim 1 above, and further in view of Vitos et al Surf. Sci. 411 (1998), p. 186).

Claim 2 requires that the surface energy be increased above 60mN/m and claim 13 further requires that the surface energy be increased to above 760mN/m. As discussed above, increasing the surface energy improves the wettability and adhesion of coatings on that surface, however, Maruhashi et al in view of Heiremans et al in view of Pocock et al do not teach this surface energy.

However, Vitos et al teach that certain single crystal surfaces of metals can have very high surface energies. For instance, the (110) surface of BCC iron has been experimentally found to have an energy of 2,417mN/m (Table 5).

Knowing this, it would have been obvious to a person of ordinary skill in the art at the time of invention to construct a hollow body of bcc iron with an outer surface comprising the (110) surface. Such a person would have been motivated to do so in order to enjoy much greater wettability and adhesion of the gas barrier coating than could be obtained by a polymer surface.

### ***Conclusion***

6. No current claims are allowed

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The amendment of July 09, 2005 added new matter which must be cancelled.

The following reference is though not used in a rejection, is being made of record as pertinent to the disclosure: (Palmers, Johan. Medical Device & Diagnostic Industry Magazine Jan 2000, p. 96. Retrieved from <http://www.devicelink.com/mddi/archive/00/01/008.html> on 09-08-2008).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL G. HORNING whose telephone number is (571) 270-5357. The examiner can normally be reached on M-F 9-5pm with alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael B. Cleveland can be reached on (571)272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. G. H./  
Examiner, Art Unit 1792

/Michael Cleveland/  
Supervisory Patent Examiner, Art Unit 1792